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ABSTRACT

A step-by-step guide to the selection of a microcomputer system is provided for educators having made the decision to implement computer-assisted instruction. The first step is to clarify reasons for using a microcomputer rather than conventional instructional materials. Next, the degree of use (e.g., types of courses and number of departments that will use the system) and specific applications in drill work, regular classroom instruction, and use by instructors or students must be decided in order to determine the necessary level of sophistication and the required peripheral equipment. Then, desired capabilities should be examined, such as links between peripherals, degree of user feedback, and software needs. Then it is important to gain administrative support and to begin an active pursuit of funding through research funds, alumni or business gifts, pooling funds among potential users, etc. A search committee should then be formed to include the potential users of the system and a person knowledgeable about computers. The search committee should gather information about existing systems from other users, campus experts, and the literature. System demonstrations by vendors should then be arranged, and the vendors should be queried about interface with existing equipment, programming capabilities, software availability, amount of memory, total costs, service and training availability, warranty conditions, and the immediacy of delivery. (KL)

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CHOOSING A MICROCOMPUTER FOR USE AS A TEACHING AID

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Presented at the Annual Conference of the Pennsylvania Association of Two-Year Colleges (Carlisle, PA, April 1-2, 1982).

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CHOOSING A MICROCOMPUTER FOR USE AS A TEACHING AID

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Computers can no longer be considered a fad, nor can they be ignored. Because they have become more compact, versatile, affordable, and easier to operate, they have spread into all areas, including education. As a result of proliferation of affordable microcomputers, educators are facing a new age--the age of computer-assisted instruction. Computers make learning fun, and students, having been exposed to computers and computer games since elementary school where computer-assisted instruction was first introduced, are eager to "play" with them. Although computer-assisted instruction makes learning easier for students, it does not necessarily make teaching easier. In fact, it adds a burden by requiring training and preparation. Why then are educators becoming involved with such a nuisance? The answer is threefold: it's exciting; it's here to stay; but, most important, it works--it helps students learn.

The decision to use computer-assisted instruction opens the door to what could be a monumental task for the instructor who is a novice in the computer field, a task which begins with a search for a microcomputer system which is uniquely suited to the instructional situation in which it will be employed. This paper offers a practical approach to that time-consuming, frustrating search.

The first step in choosing a microcomputer is to think through your project. What do you want to accomplish? Why do you want a microcomputer? What will it do for your project that older, conventional equipment will not do? What pedagogical advantages will ensue from using the microcomputer? Will it really help you to teach better and the students to learn more effectively?

When these general questions have been answered, start getting more specific. Here a series of questions might serve as a guide:

1. What specific application will you and your campus make of the microcomputer? What courses will rely on it? Will it be utilized by only one department or course or do you envision a multi-department or multi-course usage? The answer to these questions will determine the general type of equipment you should investigate. For example, you will now know if you want a microcomputer, a minicomputer, or a word processor. Narrowing down your options will make your search easier.

2. What do you want your microcomputer to do? Will it be used for drill work to aid basic instruction, for regular classroom instruction, or for more innovative applications? A related consideration is whether it will be used only by the instructor for demonstrations in the classroom, by the students individually, or by small groups. The answers to these questions determine how sophisticated a system you require and tell you how much and what kind of peripheral equipment you will need. For example, if you decide on the individual drill work usage, you need several stations (terminals and small monitors), but perhaps no printer. Classroom usage requires only one terminal but several large monitors. Any usage demanding hard copy--such as faculty research or some innovative approaches--necessitates buying a printer. Printers vary in size, quality, and price. A letter quality printer is about one-half the cost of your entire microcomputer system, so you don't want one if a less expensive dot matrix printer will do.

3. What capabilities do you want in a microcomputer? The answer to this question coupled with the requirements you defined in questions 1 and 2 will complete your list of microcomputer needs, give you a reasonable overview of the system to present to administrators and to use in your grant search,

and enable you to make an approximate estimate for funding. Some capabilities that should concern you are the following: a) Do you need any links between pieces of the system (several monitors linked together or several terminals fed into one printer)? b) How interactive does your system need to be? (how much prompting and feedback will users require?) c) Do you want to program the computer yourself or will you be relying on already developed software? and d) Do you wish to hook your microcomputer to the main frame at your institution? Answers to these questions will rule out some systems, making your search more manageable.

Once you have defined what you want your microcomputer to do and decided in general what equipment you will require, it is time to gain administrative support and actively pursue funding possibilities. Before approaching anyone, write up a one-page proposal of your project and list your equipment needs. Seek the support--both moral and financial--of your immediate superior. Try to elicit his/her cooperation by having sound reasons for embarking on your project. Ask for advice on preparing a funding proposal and encourage him/her to recommend other administrators who make equipment decisions and/or have control of funds. Follow up his/her suggestions and from each person with whom you confer, get the names of other key people. Ask each about available scholarly or research funds to which you might apply, grants they may know about, and places in the budget where your project might qualify for funding. Contact the grant office of your institution and ask them to do a search of all possible funding sources for you and to put you on their mailing list for source updates. Don't overlook such obvious sources as gifts to the university, alumni offices, and lists of companies that might be willing to sponsor your research. Sometimes the computer company you buy from will even be interested in underwriting some of your investigation. Finally, look at the

possibility of combining your project with someone else's on the faculty. Microcomputers are expensive and showing administrators that they will have maximum usage is a plus.

Once your grant search is underway, the next logical step is forming a search committee. Ideally everyone who is going to use the equipment should be on the committee. If this group is large, however, arranging demonstrations to accommodate everyone's schedule could be impossible--or chaotic at least. If your group is large and plans separate uses for the computer, the committee should be composed of representatives of each interest group. If the potential users are not computer-wise, a person who is knowledgeable in the field is essential to the committee. A computer person from your campus would be a logical choice, providing he/she is interested and willing. Without such a person, you will frequently discover, after a vendor has left, questions that you should have asked but neglected out of ignorance. Your "expert" will think of many such questions.

Your search committee should become as well informed as possible. You will find three valuable sources of information: 1) The first is people who are already using microcomputers. Those who have been through the selection process will be willing to help and will offer innumerable good tips. Instructors in your specific field who are are using computer-assisted instruction will, of course, be the most helpful. Ask particularly about problems with student usage and equipment breakdown. You will find that some equipment has a reputation for being tough, others for being fragile, etc. 2) The experts in the computer center on your campus will no doubt prove invaluable at this point. They know the right questions to ask; they have contacts with computer people who may be of assistance to you; and they are familiar with computer companies, so take advantage of their experience. 3) Along with

talking to others, your committee will want to familiarize itself with the available literature on the topic. Again, your computer people can offer guidance and recommend journals for people interested in computer-assisted instruction.

Your reading, your question and answer sessions with other instructors, and your contact with computer "experts" will yield a list of potential equipment. Use this list to arrange for demonstrations from vendors--their names and addresses will be available through your computer center as well as in ads, promotional literature, and the "yellow pages." Prepare for these demonstrations by listing questions you will want to ask. For example:

1. Can the equipment be hooked to a main frame or to other equipment, such as typewriters or monitors?
2. Is the equipment programmable?
3. What software is compatible with your equipment? How available is it?
4. How much memory is available on each microcomputer?
5. What is the cost of the equipment? Be advised that the quoted price may not include everything you need for your application, such as cables, modems, couplers, even disk drives which may be priced separately. In most cases software is priced separately, and in some cases it is rented. Be sure to ask about these "hidden costs."
6. Is service available? From what distance and in what time frame?
7. What are the conditions of the warranty that comes with the equipment? What exactly does it cover? For how long? If the machinery breaks down, must you crate it up and send it off somewhere and thus be without it for what may be an extended period of time, or will it be serviced on the site? Is replacement equipment or parts readily available?
8. Is training available? Free? Where? When? By whom? For how many?
9. How long until the equipment will be delivered? Strangely, time becomes very important after the decision has been made. You'll also want to inquire about the method of delivery and whether or not the vendor sets up the equipment for you. This shopping process is very time consuming, so allow plenty of time.

By the time you have seen several microcomputer demonstrations and determined which systems will suit your needs, information on funding sources should

be accumulating. Try to match your needs and desires with sources that seem most likely to support your type of project. Gather together proposal forms and get ready to work out final details. Most important, check on how much money is likely to be forthcoming as this will be a major factor in your equipment decisions.

You are now ready to make a final decision on your microcomputer system. Compare all the systems you have seen with your list of needs and choose the ideal system for your institution. Now look at available funds; if they match the cost of your ideal, bravo! If not, the time for compromise has arrived. Start by determining what you could do without or which items could be of lesser quality. These decisions are difficult and take time, especially if more than one person is involved. But stick with it until you are all satisfied. A system that doesn't suit your needs is a great source of frustration; one that does is a sheer joy. Good Luck!

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